MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 3, 2017/2018

BDM2384 – DATABASE MANAGEMENT SYSTEMS
(All sections / Groups)

01 JUNE 2018
3.00 p.m – 5.00 p.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of 5 pages (including cover page) with 4 questions only.

2. Attempt ALL FOUR questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please write all your answer in the Answer Booklet provided.
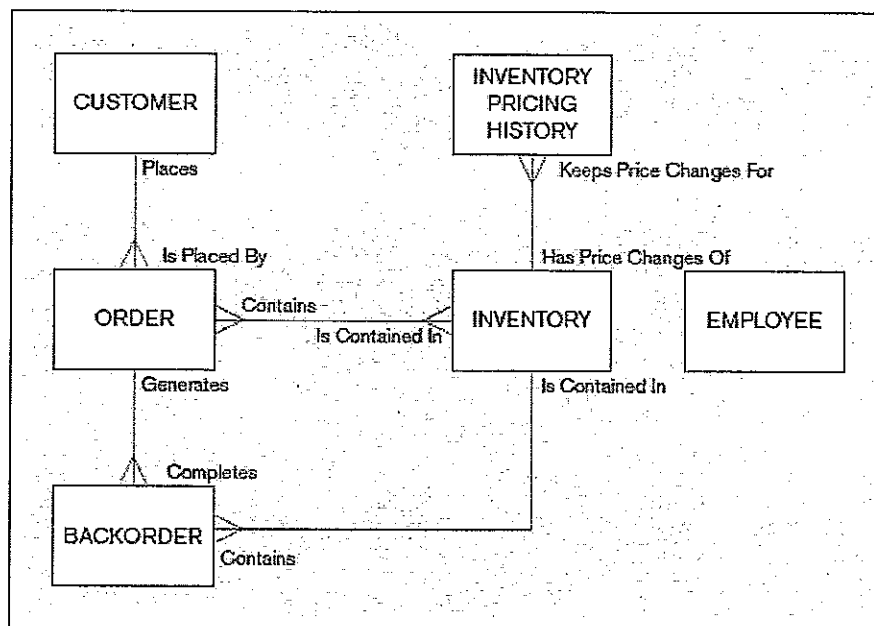
Question 1 (25 Marks)

a) Driver's license bureau maintains a database of licensed drivers. State whether each of the following represents data or metadata. If it represents data, state whether it is structured or unstructured.

(7 Marks)

1. Driver's name, address, and birthdate
2. The fact that the driver's name is a 30-character field
3. A photo image of the driver
4. An image of the driver's fingerprint
5. The make and serial number of the scanning device that was used to scan the fingerprint
6. The resolution (in megapixels) of the camera that was used to photograph the driver
7. The fact that the driver's birth date must precede today's date by at least 16 years

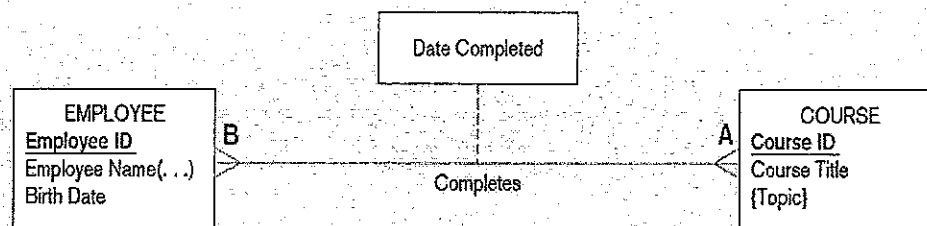b) Interpret the given enterprise data model diagram and identify the business rules represented in it.

(8 Marks)

c) Identify the problem in the given entity-relationship diagram and provide suitable solution to solve it.

(10 Marks)

Question 2 (25 Marks)

Assume that you are working as a manager in a car rental company. You are responsible to develop a database for the company. Below are the details.

- The information required includes a description of cars, subcontractors (i.e. garages), company expenditures, company revenues and customers.
- Cars are to be described by such data as: make, model, year of production, engine size, and fuel type, number of passengers, registration number, purchase price, purchase date, rent price and insurance details. It is the company policy not to keep any car for a period exceeding one year.
- All major repairs and maintenance are done by subcontractors (i.e. franchised garages), with whom the company has long-term agreements. Therefore, the data about garages to be kept in the database includes garage names, addresses, range of services and the like.
- Some garages require payments immediately after a repair has been made; with others car rental company has made arrangements for credit facilities.
- Company expenditures are to be registered for all outgoings connected with purchases, repairs, maintenance, insurance etc.
- Similarly, the cash inflow coming from all sources - car hire, car sales, insurance claims - must be kept of file.
- The company maintains a reasonably stable client base. For this privileged category of customers, special credit card facilities are provided. These customers may also book in advance a particular car. These reservations can be made for any period of time up to one month.

Continued...

- Casual customers must pay a deposit for an estimated time of rental, unless they wish to pay by credit card. All major credit cards are accepted. Personal details (such as name, address, telephone number, driving licence, number) about each customer are kept in the database.

Required

a) Identify all the Entities and their attributes.

(10 Marks)

b) Provide the Entity-Relationship Diagram with appropriate connectivities and cardinalities.

(15 Marks)

Question 3 (25 Marks)

The relational schema for a class scheduling database is given below;

Student(**Student ID**, Student_Name)

Staff(**Staff ID**, Faculty_Name)

Course(**Course ID**, Course_Name)

Qualified(**Faculty ID, Course ID**,Date_Qualified)

Section(**Section No, Semester, Course ID**)

Registration(**Student ID, Section No, Semester**)

Write the SQL commands for the following queries;

a)   Create the table Qualified with appropriate foreign key and integrity constraints.

(5 Marks)

b)   Add a student with student ID of 65798 and last name Lopez to student table.

(3 Marks)

c)   Remove the student details which you added in the previous question.

(2 Marks)

d)   Modify the course name from "Database" to "Introduction to Relational Databases" whose course ID = ISM4212.   (5 Marks)

e)   How many students are enrolled in Section 2714 in the first semester of 2009?

(5 Marks)

Continued...

f)   Which faculty members have qualified to teach a course since 1993? List the staff_ ID, course and date of qualification.

(5 Marks)

Question 4 (25 Marks)

a)   Briefly explain what business conditions that encourage using distributed databases.

(10 Marks)

b)   A *real-time data warehouse* is a *data warehouse* that is updated the moment the transaction happens in the source system. What types of applications would benefit from real-time data warehousing?

(5 Marks)

c)   Explain the advantage of On-Line Analytical Processing tools and how business companies can use it.

(10 Marks)

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